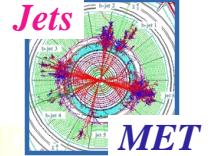




MUONS IN HO

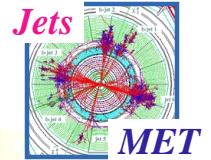


Salavat Abdullin, UMD

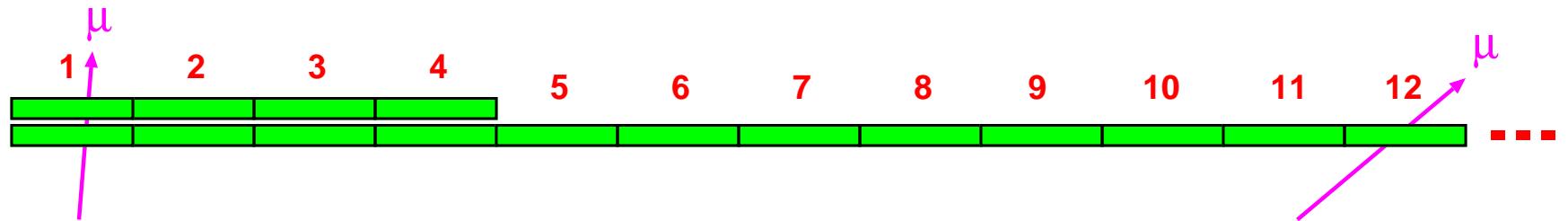


- 👉 **The idea is to use HO ("tailcatcher") in the muon trigger**
- 👉 **Dan Green : we always assumed to use HO this way ...**
- 👉 **Is it feasible at the current noise level ?**

CALCULATIONAL DETAILS



CMSIM 121 + ORCA_5_3_1



Updated HCAL readout simulation (next slide)

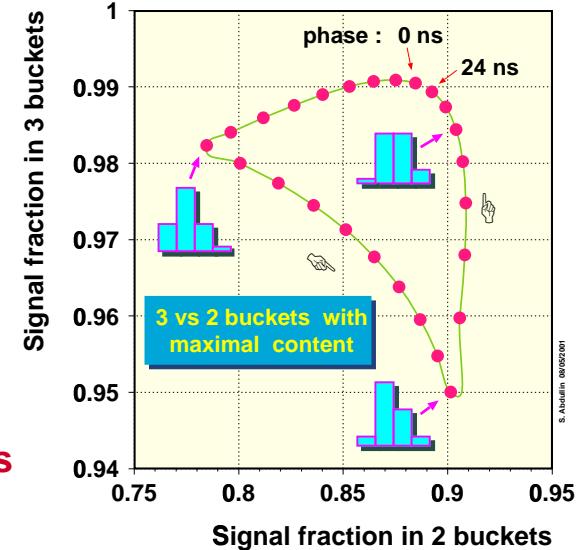
- Noise sigma per time bucket : 2 pe
- Singal collection in 2 time buckets (~ 90 %)
- ADC count : 3 pe
- Muon signal : ~ 8 pe / scintillator -> 0.25 MeV / pe



NON-EXHAUSTIVE UPDATE LIST

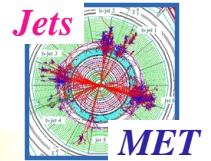


- **Realistic noise**
 - Noise sigma per time bucket : 2 pe
- **HPD photo statistics effect**
 - sizeable for resolution at high energies
- **QIE integration in 25 ns time buckets**
 - ~ 91 % of the signal collected in 2 time buckets
- **ACD quantization**
 - Minimal ADC count = 3 pe ~ LSB of 330 (125) MeV in HB (HO)
- **HF splitting from HB/HE**
 - and from ECAL !
 - its own noise ~ 0.125 pe and ADC count ~ 0.43 pe
 - 1 bkt signal integration
- **Layer 0 and 1 "optical" merging both in HB and HE**

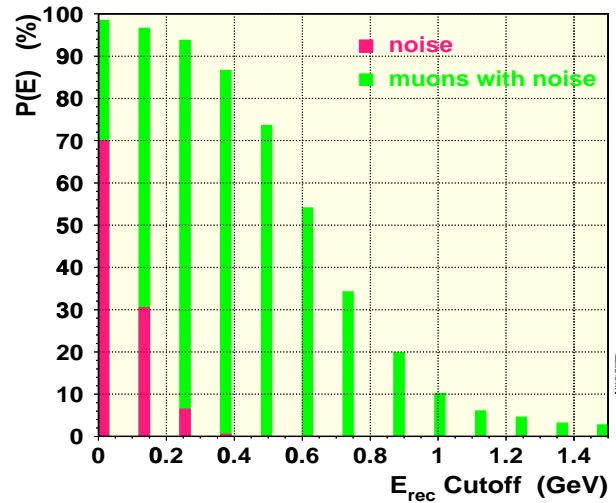
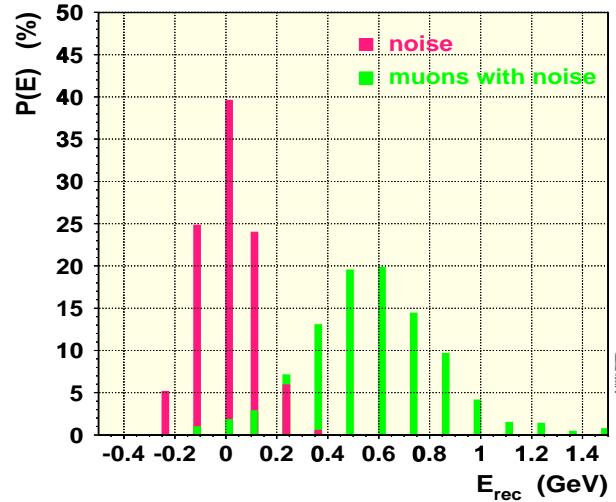




20 GEV MUONS VS NOISE



HO central ring (1st tower) :
two scintillator layers



HO third ring (12th tower) :
one scintillator layer

